

**APPARATUS AND METHOD FOR CONTINUOUS FORMATION OF
COMPOSITES HAVING FILLER AND THERMOACTIVE
MATERIALS, AND PRODUCTS MADE BY THE METHOD**

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ABSTRACT

A method for forming a product from cellulosic material and thermoactive material is described. A mat is formed from a mixture having a predetermined amount of cellulosic material and a
10 predetermined amount of thermoplastic material. The mat is then consolidated and pressed to a predetermined final product thickness. At least a portion of a surface of the mat or product is then surface modified. Consolidating the mixture may include forming a first face layer, forming a core layer on the first face layer, and forming a second
15 face layer on the core layer. Forming the core layer may include depositing mixtures of wood flakes and plastic flakes according to mixture flake size in successive layers such that the core layer has larger flakes adjacent the first face layer and adjacent the second face layer, and smaller flakes in a middle portion of the core layer. The method
20 also can include fusing a sheet of plastic material to at least one surface of the mat, and surface modifying the plastic material. Grafting chemicals can be applied to surface modified mats, plastic material or products. A composite product also is described. One embodiment of the product comprises a first portion having a first core formed from a
25 mixture comprising a cellulosic material and a thermoplastic material, and at least one face layer attached to the first core. The product also comprises a second portion bonded to the first portion. The second portion comprises a second core formed from a mixture comprising a cellulosic material and a thermoplastic material, and at least one face
30 layer attached to the second core.